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10/542,862	01/11/2006	Andrew John Cook	1021500-000138	8659

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EXAMINER	
LANGMAN, JONATHAN C	

ART UNIT	PAPER NUMBER
1794	

NOTIFICATION DATE	DELIVERY MODE
11/27/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com

Office Action Summary	Application No.	Applicant(s)	
	10/542,862	COOK ET AL.	
	Examiner	Art Unit	
	JONATHAN C. LANGMAN	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 September 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4-11,20 and 21* is/are pending in the application.

4a) Of the above claim(s) *11* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4-10,20 and 21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/9/2009*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 27, 2009 has been entered.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 21 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The applicant states that the lead free solder comprises 10 % bismuth. The applicant points to page 9 of the specification for support of this new claim limitation. However upon further review, the solder that comprises 10% bismuth also comprises lead, and therefore is not a lead free solder. The applicant has not shown and Examiner can not find support for a lead free solder comprising less than 50% tin and 10% bismuth.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by, or in the alternative, rejected under 35 U.S.C. 103(a) as being unpatentable over Pereira (US 6,253,988).

Regarding claim 1, Pereira teaches that "Windshields and rear windows of vehicles such as automobiles often include electrical devices located within or on the glass. Typically, the electrical devices are antennas or defrosters. In order to provide an electrical connection to such an electrical device, a small area of metallic coating is applied to the glass which is electrically connected to the electrical device. An electrical connector for connecting to a lead or the lead itself is then soldered to the metallic coating on the glass." (col. 1, lines 10-18). Pereira then teaches a lead free solder (col. 3, lines 17) in order to reduce damage to the glass, such as a solder that has small amounts of tin in order to prevent cracks in the glass pane (col. 1, line 30 and col. 3, lines 3-10). The solder comprises a composition of tin in an amount of less than 50%, and indium in an amount of more than 50 weight percent is indium (col. 1, lines 35-40 and col. 2, lines 50-65).

Pereira et al. teach that small amounts of bismuth may be added to the solder (col. 2, lines 63). Bismuth is considered a mechanical stress modifier and reads on the

claims as presented. Although Pereira et al. do not refer to bismuth as a mechanical stress modifier, these solders share compositions similar to those instantly claimed, and therefore are expected to behave in similar manners to those instantly claimed (i.e. which inhibits the occurrence of a stress fault (i.e. crack) in the pane of glass in the region of the solder). It has been held that where the claimed and prior art products are identical or substantially identical in structure or are produced by identical or a substantially identical processes, a prima facie case of either anticipation or obviousness will be considered to have been established over functional limitations that stem from the claimed structure. *In re Best*, 195 USPQ 430, 433 (CCPA 1977), *In re Spada,* 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). The ***prima facie*** case can be rebutted by evidence showing that the prior art products do not necessarily posses the characteristics of the claimed products. *In re Best*, 195 USPQ 430, 433 (CCPA 1977).

Since Pereira et al. teach the same solder composition as instantly claimed, i.e. a solder with less than 50 wt% Tin and that the solder also comprises bismuth, it is inherent that the solder will behave in the same manner as instantly claimed. It is inherent that the solder will inhibit the occurrence of a stress fault in the pane of glass in the region of the solder.

Regarding claim 4, since the vehicular glazing panel of Pereira et al. is the same as the instantly claimed vehicular glazing panel, it is inherent that it will exhibit the same fall in the stress as generated in the pane of glass, after an initial rise, described as a function of time, as instantly claimed (see in re best case law applied above).

Regarding claim 8, it is inherent that since the vehicular glazing panel of Pereira et al. is the same as the instantly claimed vehicular glazing panel, that it will exhibit the same stress fault wherein, the stress fault manifests itself as a structural defect in the interface between the solder and the first electrically conductive component. See *In Re Best* as applied above.

Claims 1, 4, 5, 8, 9, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by, or in the alternative, rejected under 35 U.S.C. 103(a) as being unpatentable over Castle et al. (EP 1110431) as evidenced by Sarkhel et al. (US 2001/0002982).

Regarding claims 1 and 20, Castle et al. teach as seen in Figure 2, a glass sheet, 22, a busbar, 6, and a low melting solder, 26. The low melting solder is used to connect to the heating wires, 3, as seen in figure 1 ([0021] and [0023]). The busbar, 6, and the heating wires, 3, read on the first and second electrically conductive components instantly claimed joined by the low melting point solder, 26.

The low melting solder is taught to be either lead/bismuth eutectic or tin/bismuth eutectic with a melting point of 138°C ([0003] and [[0021]). Castle is silent to the composition of the Tin/bismuth eutectic solder, however, tin/bismuth eutectic solder is a lead free solder known in the art to comprise tin in amounts of less than 50% and a mechanical stress modifier comprising bismuth. Sarkhel et al. evidences that the eutectic Bismuth/Tin solder known in the art is 58-Bi/42-Sn, which has a melting point of 138°C ([0040]).

Bismuth is considered a mechanical stress modifier and reads on the claims as presented. Although Castle et al. do not refer to bismuth as a mechanical stress modifier, these solders share compositions similar to those instantly claimed, and therefore are expected to behave in similar manners to those instantly claimed (i.e. which inhibits the occurrence of a stress fault (i.e. crack) in the pane of glass in the region of the solder). It has been held that where the claimed and prior art products are identical or substantially identical in structure or are produced by identical or a substantially identical processes, a prima facie case of either anticipation or obviousness will be considered to have been established over functional limitations that stem from the claimed structure. *In re Best*, 195 USPQ 430, 433 (CCPA 1977), *In re Spada,* 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). The ***prima facie*** case can be rebutted by evidence showing that the prior art products do not necessarily posses the characteristics of the claimed products. *In re Best*, 195 USPQ 430, 433 (CCPA 1977).

Since Castle et al. teach the same solder composition as instantly claimed, i.e. a solder with less than 50 wt% Tin and that the solder also comprises bismuth, it is inherent that the solder will behave in the same manner as instantly claimed. It is inherent that the solder will inhibit the occurrence of a stress fault in the pane of glass in the region of the solder.

Regarding claim 4, since the vehicular glazing panel of Castle et al. is the same as the instantly claimed vehicular glazing panel, it is inherent that it will exhibit the same fall in the stress as generated in the pane of glass, after an initial rise, described as a function of time, as instantly claimed (see in re best case law applied above).

Regarding claim 5, Castle et al. teach a fired ink band, 26, known as an obscuration band that is provided around the periphery of the windshield in order to obscure the busbars during operation (Figures 1, 2, [0022] and [0023]). Castle described how the bus bars may be formed on either ply of glass ([0024], and therefore the bus bar (first electrically conductive component) will at least exist partially on top of the obscuration band of Castle in the same context as instantly claimed. .

Regarding claim 8, it is inherent that since the vehicular glazing panel of Castle et al. is the same as the instantly claimed vehicular glazing panel, that it will exhibit the same stress fault wherein, the stress fault manifests itself as a structural defect in the interface between the solder and the first electrically conductive component. See *In Re Best* as applied above.

Regarding claim 9, Castle et al. teach that the second electrical component is a heater, and is silent to the second electrical component being an electrical connector. However, the applicant has not defined what an electrical connector is, and the heating wires of Castle may be construed as an electrical connector.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 5, 6, 7, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pereira (US 6,253,988), as applied to claims 1, 4, and 8 above, in view of admitted prior art.

As described above, Pereira teaches that "Windshields and rear windows of vehicles such as automobiles often include electrical devices located within or on the glass. Typically, the electrical devices are antennas or defrosters. In order to provide an electrical connection to such an electrical device, a small area of metallic coating is applied to the glass which is electrically connected to the electrical device. An electrical connector for connecting to a lead or the lead itself is then soldered to the metallic coating on the glass." (col. 1, lines 10-18).

Regarding claim 5, Pereira is silent to the use of a fired ink band around the periphery of the pane of glass wherein the first electrically conductive component at least partially exists. The applicant's own admitted prior art on page 2, first paragraph, states that it is well known in the art to place bus bars (first electrically conductive layers) "on a top of a band of fired, printed ink, which is preferably black and which extends around the periphery of the pane of glass. Such a band is known as an obscuration band." This is done in the art, as is known, in order to hide the conductive layers from view during vehicle operation. It would have been obvious to a routineer in the art to provide the surface of the pane of glass of Pereira et al. with a fired ink band, on top of which the first electrically conductive component at least partially exists, as this has been shown to be a known technique in the art of windshield manufacturing,

and common practice with defrosters or antennas integrally formed on a windshield in order to hide the conductive layers during operation.

Regarding claims 6 and 7, the applicant defines the glass as toughened and as a laminate, Pereira is silent to the use of toughened or one-ply laminates as the glass substrate, however, the applicant teaches that these substrate are obvious known alternatives in the art, and thus functional equivalents (instant specification, page 2 last paragraph to page 3, first paragraph). It would have been obvious to a person having ordinary skill in the art at the time the present invention was made to use toughened glass or to have glass that is one ply of a laminate.

It is inherent that since the vehicular glazing panel of Pereira et al. in view of the admitted prior art, is the same or substantially the same as the instantly claimed vehicular glazing panel, that it will exhibit the same stress faults for the respective substrates. See *In Re Best* as applied above.

Regarding claims 9 and 10, Pereira et al. only discuss the particulars of the first and second electrically conductive components in the background section of their work. Pereira et al. do teach the use of antennas, and defrosters being soldered to an electrically conductive band on a glass windshield. And in combination with the applicants own admitted prior art on page 2 of the instant specification, it would have been obvious to a routineer in the art to use the solder of Pereira et al. with the devices instantly claimed, as Pereira briefly discusses these devices in the background art of their work, and in light of the applicants own admitted art, shows that this is common and known practices in the art.

Claims 6, 7, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pereira (US 6,253,988), as applied to claims 1, 4, 5, 8, 9, and 20 above, in view of admitted prior art.

Regarding claims 6 and 7, the applicant claims the glass as toughened and as a laminate, Castle et al. is silent to the use of toughened or one-ply laminates as the glass substrate, however, the applicant teaches that these substrate are obvious known alternatives in the art, and thus functional equivalents (instant specification, page 2 last paragraph to page 3, first paragraph). It would have been obvious to a person having ordinary skill in the art at the time the present invention was made to use toughened glass or to have glass that is one ply of a laminate.

It is inherent that since the vehicular glazing panel of Castle et al. in view of the admitted prior art, is the same or substantially the same as the instantly claimed vehicular glazing panel, that it will exhibit the same stress faults for the respective substrates. See *In Re Best* as applied above.

Regarding claims 9 and 10, Castle et al. only discuss the soldering of busbars to defrosters or defoggers. Castle et al. do teach the use of antennas, and defrosters being soldered to an electrically conductive band on a glass windshield. However, in combination with the applicants own admitted prior art on page 2 of the instant specification, it would have been obvious to a routineer in the art to use the solder of Castle et al. with the devices instantly claimed, as the applicants own admitted art, shows that this is common and known practices in the art.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pereira (US 6,253,988) in view of Castle et al. (EP 1110431).

Regarding claim 20, Pereira teaches that "Windshields and rear windows of vehicles such as automobiles often include electrical devices located within or on the glass. Typically, the electrical devices are antennas or defrosters. In order to provide an electrical connection to such an electrical device, a small area of metallic coating is applied to the glass which is electrically connected to the electrical device. An electrical connector for connecting to a lead or the lead itself is then soldered to the metallic coating on the glass." (col. 1, lines 10-18). Pereira then teaches a low temperature, lead free solder (col. 3, lines 17) in order to reduce damage to the glass, such as a solder that has small amounts of tin in order to prevent cracks in the glass pane (col. 1, line 30 and col. 3, lines 3-10). The solder comprises a composition of tin in an amount of less than 50%, and indium in an amount of more than 50 weight percent is indium (col. 1, lines 35-40 and col. 2, lines 50-65).

Pereira's main efforts are centered around utilizing a low temperature solder, and suggests that the solder should have a melting point 50 ^{o}C lower than currently available solders (193^{o}C) (col. 1, lines 1-15, and col. 3, lines 20-26). Pereira teach that high percentages of tin tends to crack automotive glass due to the dissimilar coefficients of thermal expansion of automotive glass and tin (col. 3, lines 1-10). Gleaning from

these teachings a routineer in the art would appreciate the strides Pereira has taken into finding low tin, lead free, low melting point solders.

Pereira et al. teach that small amounts of bismuth may be added to the solder (Table 1). However fail to teach a solder with 58 percent bismuth. However it is the Examiners position that any known low tin, lead free, low melting point solder would have been an obvious alternative to the low tin, low melting point, lead free solder of Pereira.

Known lead free, low melting point, low tin solders are known in the art and taught by Castle et al. Castle et al. teach in the same art a tin/bismuth eutectic solder with a melting point of 138°C used to connect bus bars and heating elements within a windshield (see at least [0003], [0021], and [0023]). As is known in the art Tin/Bismuth eutectic solder comprises bismuth (a mechanical stress modifier) in an amount of 58 weight percent and tin in an amount of 42 weight percent (50 weight percent or less).

It would have been obvious to a person having ordinary skill in the art at the time the present invention was made to use the lead free, low melting point, low tin solder as taught by Castle et al. as an alternative to the solder of Pereira et al. as it has been shown to be a known and functionally equivalent (i.e. providing connection) solder in the art of connecting two electrical components on or within a windshield.

Although the solder of Castle et al. does not refer to bismuth as a mechanical stress modifier, this solder shares a composition similar to that which is instantly claimed, and therefore is expected to behave in similar manners to those instantly claimed (see in re best case law applied above).

Response to Arguments

The applicant continues to traverse the rejections, arguing that that it would not have been obvious to use any known low melting temperature, low tin, lead free solder in the art as an alternative to the low tin, low melting temperature, lead free solder of Pereira.

The applicant argues that Pereira's solder composition is specifically selected to have a relatively low melting point so that heat flow to a glass windshield will not crack or otherwise damage the glass. The Examiner agrees. Pereira teaches a solder that is at least 50°C less than conventional solders of 193°C (col. 1, lines 17 and col. 3, lines 20-25). Thus, low melting point solders that are effective in the art in preventing cracks are preferably less than 143°C.

The applicant argues that Pereira discloses that the low melting temperature of the solder composition is achieved by the particular elements present and the relative amounts of those elements within the solder composition. The Examiner agrees. It appears that the bulk of Pereira's work was in using low tin amounts which results in a solder that will reduce cracks in windshields (col. 3, lines 1-7).

The applicant argues that Pereira teaches specific maximum amounts of bismuth and antimony, and that increasing these specific amounts will adversely affect the material properties of the solder composition (i.e. the low melting temperature of the solder. The examiner does not see where Pereira teaches that changing these amounts adversely affects the solder.

The applicant's arguments are to the combination of Pereira with Gonya or Kitajima. The Examiner has since amended the rejection, to be Pereira in view of Castle. The rejections using Kitajima and Gonya were removed because Castle used the applicants' inventive solder in the same art as Pereira and the same art as instantly taught. Nevertheless the applicant's arguments are addressed as if they were directed to Castle so as to further prosecution.

The applicant argues that substituting the solder composition with a solder of 58% bismuth, and 42% tin, as proposed by the Examiner, would render Pereira's solder unsatisfactory for its intended purpose (MPEP 2143.01(V)). The examiner disagrees. The purpose of Pereira's solder composition is to provide a lead free, low melting point, low tin solder, so as to provide an environmentally friendly solder that does not generate cracks in the regions of the solder. Castle teaches that a solder comprising 58% bismuth/42% tin is a lead free, low tin, low melting point solder. The melting point falls within Pereira's generic teaching of 143°C and therefore would be expected by a routineer in the art to be satisfactory for its intended purpose, and would have been an obvious design choice to a routineer in the art, contrary to the applicant's position.

The applicant asserts on page 8 of their arguments, that it is "thus apparent from Pereira's own disclosure that the patent is specifically concerned with providing a low melting temperature solder". The Examiner whole heartedly agrees. The applicant states that this low melting temperature is based on the constituents of the solder and the amounts of those constituents. On page 9, the applicant asks why an ordinarily skilled artisan would modify Pereira's solder composition to include 58 weight %

Bismuth not withstanding Pereira's disclosure of using only trace amounts of Bismuth so as to not adversely affect the desired low melting temperature characteristics of the solder.

The Examiner is not modifying the solder by changing amounts of bismuth in Pereira's solder. The Examiner's rejection is one that substitutes the low melting point solder of Pereira with other known low melting point solders in the art. Pereira teaches that bismuth and antimony are only used in their particular solder in small amounts. Pereira could not disclose every possible low melting temperature solder. What is to be gleaned from Pereira is their teaching of low tin solders, used to lower the melting temperature and to reduce cracks. Other low tin, low melting temperature solders in the art including 42% tin/58% bismuth which is used in the automotive windshield industry to connect two electrical components as is recognized by Castle, would have been obvious substitutions to the low tin, low melting temperature solder taught by Pereira.

On a side note, the applicant's disclosure of solder 3 in claim 21, a lead containing solder with 10% bismuth (i.e. 25 tin, 62 lead, 3 silver and 10 bismuth) is a known solder in the art and taught by Pereira et al. US 6,039,616 (see at least col. 4, lines 65-67).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JONATHAN C. LANGMAN whose telephone number is (571)272-4811. The examiner can normally be reached on Mon-Thurs 8:00 am - 6:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on 571-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JCL

/Timothy M. Speer/

Primary Examiner, Art Unit 1794